REMARKS

United States Serial No. 10/584,869 was filed on April 20, 2007. The Office mailed a Final Office Action on November 24, 2008. Applicants respectfully traverse the rejection of claims 1-20 for the reasons set forth below. Applicants respectfully request reconsideration and the issuance of a formal Notice of Allowance for claims 1-20.

35 U.S.C. § 102

Claims 1-4, 6-12, 15 and 17-20 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Mills, et al. (US 2002/0161071) ("Mills"). With regard to claims 1-4, 11-12 and 15, it is alleged that Mills teaches a cementitious composition which comprises, in pertinent part, 25 to 95% calcium aluminate and 0 to 10% lime. It is further alleged that "[t]aking into account the calcium oxide (lime) content of the calcium aluminate . . ., the overall lime content exceeds 13%, and can exceed 40% according to the disclosed amounts of the ingredients in the composition."

Applicants respectfully submit that the Office Action's characterization of Mills is technically incorrect. While it is true that lime (e.g., CaO) and calcium aluminate (e.g., Al_2CaO_4) molecules both contain calcium and oxygen atoms, it is not correct that calcium aluminate "contains" lime. As described in H.F.W. Taylor, Cement Chemistry, 2d, 1997, a copy of the pertinent portion of which is included as Appendix A, in the paragraph bridging pages 3 and 4, "[c]hemical formulae in cement chemistry are often expressed as sums of oxides; thus tricalcium silicate, Ca_3SiO_5, can be written as $3CaO{\cdot}SiO_2$ [and Al_2CaO_4 can be written as $CaO{\cdot}Al_2O_3$]. **This does not imply that the constituent oxides have a separate existence within the structure**" (emphasis added). This nomenclature is confirmed in Mills, at paragraph [0018].

Lime and calcium aluminate are distinct compounds which react differently, and are required to react differently in order to have their respective necessary effects on cementitious compositions as required in the present application. The lime "content" of calcium aluminate is not available to react as lime, as it remains a part of the calcium aluminate. If the lime "content" of calcium aluminate were to react as lime within the cementitious composition, there would be no calcium left to form the clinker phases necessary for the cementitious composition to act as a

hydraulic binder. Further, it is well known in the art that the various oxides that form many cements, such as calcium oxide, alumina, ferric oxide and silica, are, by themselves, rather unreactive with respect to water, and thus a mere mixture of these oxides would not work as a hydraulic binder. The cement manufacturing process is necessary to transform these oxides into a crystalline form which is suitable for reaction with water and can therefore react as a hydraulic binder.

Further, Mills claims a composition which requires the presence of from 25 to 95% calcium aluminate and from 0 to 10% lime. If the alleged interpretation of the lime "content" of calcium aluminate were utilized to interpret the claimed composition of Mills, then Mills would contain a minimum of about 36% lime, which is contrary to the claimed limitation of Mills of from 0 to 10% lime. Therefore, this interpretation of the lime "content" of calcium aluminate would render Mills unclear and non-enabling.

In the Final Office Action at page 5, it is alleged that "Mills states that the calcium aluminate may be provided by high alumina cement (¶17). Mills goes on to say that by high alumina cement, they mean a cement which contains not less than 32% by weight of alumina and has an alumina to calcium oxide ration of between 0.85 and 1.3:1. A typical analysis of such cement is 38.5% by weight calcium oxide (¶24-25). If 10 % lime and 90% calcium aluminate provided by high alumina cement are used to compose the cementitious composition, then the composition contains about 44% lime. That is what is meant by the 'calcium oxide content of the calcium aluminate' mentioned above and previously."

However, one of skill in the art would know that the typical analysis described above to show that the high alumina cement contains 38.5% by weight calcium oxide is merely used to classify the cement in order to determine its most appropriate uses. As described above, the calcium oxide content is present as part of the cementitious composition, and is not free to react as lime. Further, if the calcium oxide was free to react as lime, the hydraulic binding reactivity of the cementitious composition would be greatly diminished, if not completely halted. Therefore, Mills does not teach the presence of lime in amounts higher than 10%, regardless of the calcium oxide content of the cementitious composition.

In view of the above arguments, Applicants respectfully submit that the presence of 0 to 10% lime and 25 to 95% calcium aluminate in the composition of Mills does not anticipate the at least 13% by weight of lime present in the water absorbing composition (i) of present claim 1. Applicants therefore respectfully request withdrawal of the § 102(b) rejection of claim 1.

Claims 2-4, 6-12, 15 and 17-20 depend, either directly or indirectly, from claim 1. MPEP § 2131 states that "'[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 . . . (Fed. Cir. 1987)." MPEP at 2100-67. Independent claim 1 necessarily contains elements which are present in claims which depend from claim 1. Therefore, Applicants respectfully submit that the dependent claims are not anticipated by Mills, for the reasons discussed above, and respectfully request withdrawal of the § 102(b) rejection of claims 2-4, 6-12, 15 and 17-20.

35 U.S.C. § 103

Claims 5, 13-14 and 16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Mills, et al. (US 2002/0161071) in view of either Galer, et al. (US 4,350,533) ("Galer") or Matsuura, et al. (JP 2001-163650) ("Matsuura"). In light of the arguments set forth below, Applicants respectfully traverse.

It is alleged that Mills teaches a cementitious composition which comprises, in pertinent part, 25 to 95% calcium aluminate and 0 to 10% lime. It is further alleged that "[t]aking into account the calcium oxide (lime) content of the calcium aluminate . . ., the overall lime content exceeds 13%, and can exceed 40% according to the disclosed amounts of the ingredients in the composition."

It is admitted in the Office Action that "Mills et al. does not teach that the water absorbing composition contains a stoichiometric surplus of lime." It is alleged that "Galer et al. does teach cementitious compositions comprising extraneous lime (Col. 4, lines 5-25)." It is further alleged that "Mills et al. and Galer et al. are combinable because they are from the same field of endeavor, namely cementitious compositions."

MPEP § 2143.02 states that "[t]he prior art can be modified or combined to reject claims as *prima facie* obvious as long as there is a **reasonable expectation of success**. *In re Merck & Co., Inc.*, 800 F.2d 1091 . . . (Fed. Cir. 1986)." MPEP at 2100-141 (emphasis added). The discussion regarding Mills set forth above is incorporated here by reference, and Applicants respectfully submit that the Office Action's characterization of Mills is technically incorrect.

Further, Mills teaches that lime may be added in a range of 0 to 10% by weight of the cementitious composition (i). Thus, Mills teaches against any use of lime in amounts greater than 10% by weight. Furthermore, Galer teaches that the amount of extraneous lime is from 0 to 8.5% (col. 4, line 12), in contrast to the amount of lime recited in the present claim 1 (at least 13%). Therefore, one of skill in the art would not have a reasonable expectation of success in solving the problem solved by the present application by combining Mills with Galer.

In the Final Office Action at page 5, it is alleged that Mills does not teach away from any use of lime in amounts greater than 10% by weight. Preliminarily, as discussed above, the composition of Mills does not teach or suggest a composition which contains lime in amounts greater than 10% by weight. It is further alleged that "a proper teaching away would specifically state that to include more than the amount of lime taught by Mills would be detrimental to the invention and why that is so. Mills makes no statement such as that."

Applicants traverse the allegation that a proper teaching away in Mills must specifically state the undesirability of including more than 10% lime. Mills positively recites 10% as an upper limit, and provides no evidence that using more than 10% lime would be desirable. Galer's disclosure of "extraneous lime" in the cementitious composition only allows for lime in amounts from 0 to 8.5%, as stated above. Therefore, one of skill in the art would not have a reasonable expectation of success in including 13% or more lime in the cementitious composition according to the present application. Futher, Galer fails to rectify the deficiency of Mills, namely including no more than 10% lime in the cementitious composition, because Galer only utilizes 0 to 8.5% lime. Thus, the combination of Mills and Galer fails to provide each and every limitation of the claims, namely the limitation in claim 1 requiring at least 13 weight percent lime.

Applicants therefore respectfully submit that the combination of Mills and Galer does not teach or suggest the subject matter of claim 1, and that claim 1 therefore cannot be suggested by the combination.

It is admitted in the Office Action that "Mills et al. does not teach that the composition contains at least 62 weight % of lime." It is alleged however that "Matsuura et al. does teach a cement quick setting agent that can contain at least 62 weight % of lime when all of the components of the composition are taken together (Abstract)." It is further alleged that "Mills et al. and Matsuura et al. are combinable because they are from the same field of endeavor, namely cementitious compositions."

Applicants respectfully traverse. The discussion regarding Mills set forth above is incorporated here by reference, and Applicants respectfully submit that the Office Action's characterization of Mills is technically incorrect. Matsuura teaches a composition which comprises (A) 100 parts by weight of a crystalline Na_2O-CaO-Al_2O_3 based composition; (B) 1-30 parts by weight of amorphous alumina or low-crystallinity alumina; (C) 5-200 parts by weight of any inorganic salts selected from alkali aluminate, alkali carbonate, alkali sulfate, lime and gypsum; and (D) 20-100 parts by weight of a fine powder (Abstract).

Component A is a crystalline composition, and therefore the part of the composition which is CaO (40-70%) is not available as excess lime over the stoichiometric amount of CaO present in the other crystalline components. As described in Cement Chemistry (Appendix A), in the paragraph bridging pages 3 and 4, "[c]hemical formulae in cement chemistry are often expressed as sums of oxides; thus tricalcium silicate, Ca_3SiO_5, can be written as $3CaO{\cdot}SiO_2$ [and Al_2CaO_4 can be written as $CaO{\cdot}Al_2O_3$]. **This does not imply that the constituent oxides have a separate existence within the structure**" (emphasis added). This nomenclature is confirmed in Mills, at paragraph [0018]. Therefore, the characterization of component A as a crystalline Na_2O-CaO-Al_2O_3 based composition should not be read to imply that the CaO is available to react as lime, as discussed above regarding Mills.

Therefore, the only component in Matsuura which may contain lime is component C. Calculating the possible content of lime from this characterization purely mathematically, which Applicant respectfully submits is **not** the characterization which a person of skill in the art would derive from the teaching of Matsuura. This reference shows that lime may be entirely absent, or optionally present in amounts ranging from above 0% to about 62% by weight, but the latter percentage applies only if the amounts of components B (alumina) and D (fine powder) were limited to their absolute minimums, and no other C component was present. However, the description of Matsuura shows examples according to the composition of Matsuura which use lime in a range of only 0% to about 19% by weight, and as one of a plurality of C components. One of skill in the art would understand that if the proportion of one component were added in its extreme, then the proportions of the other components would be scaled commensurately. Also, one of skill in the art would understand that lime was not taught to be included as the sole C component of Matsuura.

MPEP § 2145 states that "[a] conclusion of obviousness requires that the reference(s) relied upon be enabling in that it put the public in possession of the claimed invention. . . . *In re Hoeksema*, 399 F.2d 269 . . . (CCPA 1968)". MPEP at 2100-163. Applicants respectfully submit that one of skill in the art would not be in possession of the claimed composition of Matsuura with lime content of 62%, and such an invention is therefore not enabled, since it is a drastic departure from the examples shown in the disclosure. It would therefore not be clear to one of skill in the art that use of lime above 62% would be effective. Therefore, there is no suggestion or motivation to use the composition of Matsuura to alter the composition of Mills to use at least 62% by weight lime, which specifically teaches that lime should be present in amount of no more than 10%. The combination of the contrary teachings of Mills and Matsuura to reject the present claims is therefore inappropriate.

MPEP § 2141.03(VI) states that "[a] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540 . . . (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) . . . ." MPEP 2100-126 (emphasis in original). The combination of Mills and Matsuura teaches that lime should be present at up to no more than 10%, which requires the

presence of lime (Mills), and simultaneously can be absent or present at a percentage greater than 10% (Matsuura), in direct contradiction to the teaching of Mills. Applicants respectfully submit that the references have not been considered as a whole, and the combination of Mills and Matsuura is inappropriate because the combination of these references is logically impossible.

Applicants respectfully submit that the combination of Mills and Matsuura does not teach or suggest the subject matter of independent claim 1, and that claim 1 therefore cannot be rendered obvious by the combination. MPEP § 2143.03 states that "[i]f an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071 . . . (Fed. Cir. 1988)." MPEP at 2100-142. Since claim 1, in light of the arguments set forth above, is not rendered obvious by the applied references, then claims 5, 13-14 and 16, being dependent, either directly or indirectly, from claim 1, are also not rendered obvious. Therefore, Applicants respectfully request withdrawal of the § 103(a) rejection of claims 5, 13-14 and 16 in view of the combination of Mills and Galer or Matsuura.

In view of the above amendments and remarks, Applicants respectfully request the withdrawal of the 35 U.S.C. §§ 102(b) and 103(a) rejections of claims 1-20. Applicants respectfully request the issuance of a formal Notice of Allowance for claims 1-20.

Should there be any questions regarding the above amendments or remarks, the undersigned attorney would welcome a telephone call.

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APPENDIX A